What is claimed is:

1. A deterioration diagnosis method, comprising the steps of:

formulating a corrosion loss of a metallic material to exposure days under an atmospheric condition as a function for environmental assessment points which represents a level of harmfulness of said atmospheric condition; and

diagnosing a life span of said metallic material based upon said corrosion loss calculated by using said function.

2. A deterioration diagnosis method, comprising the steps of:

formulating a corrosion speed of a metallic material under an atmospheric condition as a function for environmental assessment points which represents a level of harmfulness of said atmospheric condition; and

diagnosing a life span of said metallic material based upon said corrosion speed calculated by using said function.

3. The deterioration diagnosis method according to claim 1 or claim 2,

Wherein said environmental assessment points are taken to be a sum of multiplications of separate assessment points for each of a plurality of environmental factors, including temperature, humidity, corrosive gas, sea salt particles in an atmospheric environment , or a distance from a coast, assigned to each factor according to an amount of each factor,

and a weighting coefficient for each factor.

4. The deterioration diagnosis method according to claim 3,

wherein assessment points for each of said plurality of environmental factor including temperature, humidity, corrosive gas, sea salt particles in said atmospheric environment , or said distance from said coast are applied after classified according to a range of said amount of each environmental factor, or are a function of median of said amount of each environmental factor.

5. The deterioration diagnosis method according to claim 3 or claim 4,

wherein said method is a filter paper method, in which an amount of gas absorbed on a filter exposed for a prescribed period is calculated as an amount of the corrosive gas, is utilized for a measurement method for an amount of corrosive gas as an environmental factor;

an amount of acid gas included in said corrosive gas is measured with an alkaline filter paper, which is made of cellulose and impregnated with either of a potassium carbonate solution of a prescribed % or a sodium carbonate solution of a prescribed %; and

an amount of alkaline gas included in said corrosive gas is measured with an acid filter paper, which is made of glass and impregnated a phosphoric acid solution of a

prescribed %.

6. The deterioration diagnosis method according to claim 4, wherein said assessment points for each factor due to a range of mount of each environmental factor are divided into at least 5 classes.

7. The deterioration diagnosis method according to claim 6, wherein said assessment points for a mutual humidity in atmospheric environment where an object is exposed directly to rain and snow are calculated as a sum of said assessment points in each class and the prescribed correctional points.

8. The deterioration diagnosis method according to claim 6, wherein assessment points for sea salt particles as an environmental factor are applied due to a classification by a distance from said coast.

9. The deterioration diagnosis method according to claim 1, wherein a specified metallic material is exposed under said atmospheric environment for prescribed period;

an amount of weight loss due to corrosion is measured during exposure days of a prescribed period;

said environmental assessment points are calculated by the amount of the weight loss due to corrosion and the exposure days; and

a life span of another metallic material under said atmospheric condition is diagnosed by using said calculated environmental assessment points.

10. The deterioration diagnosis method according to claim 9, wherein a copper is used for said specified metallic material.

11. The deterioration diagnosis method according to claim 1, wherein an amount of weight loss due to corrosion of said metallic material in an atmospheric environment is represented by a linear expression of a square root of number of exposure days of said metallic material in said atmospheric environment, and coefficients in said linear expression are represented by a multinomial expression of said environmental assessment points disclosed in claim 3.

12. The deterioration diagnosis method according to claim 2, wherein; corrosion speed is represented by a linear expression of a square root of the number of exposure days of said metallic material in an atmospheric environment, and coefficients in said linear expression are represented by a multinomial expression of said environmental assessment points disclosed in claim 3.

13. The deterioration diagnosis method according to claim 1 or

claim 11,

wherein for an atmospheric environment where said metallic material is used,

a plurality of environmental factors, including temperature, humidity, corrosive gas, sea salt particles in said atmospheric conditions or a distance from a coast, are measured for a prescribed period;

said assessment points for each factor are determined by the method disclosed in claim 4 using each of measured values;

said environmental assessment points are determined by the method disclosed in claim 3 using said determined assessment points for each factor;

a relationship between said corrosion loss of a metallic material and said number of exposure days is determined using said determined environmental assessment points.

14. The deterioration diagnosis method according to claim 2 or claim 12,

wherein for an atmospheric environment where said metallic material is used,

said environmental assessment points are calculated by said method disclosed in claim 9;

a relationship between said corrosion loss of said metallic material and said number of exposure days is determined using said determined environmental assessment

points.

15. The deterioration diagnosis method according to claim 2 or claim 12,

wherein for an atmospheric environment where said metallic material is used,

a plurality of environmental factors, including temperature, humidity, corrosive gas, sea salt particles in said atmospheric environment or a distance from a coast, are measured for a prescribed period;

said assessment points for each factor are determined by the method disclosed in claim 4 using each of the measured values;

said environmental assessment points are determined by said method disclosed in claim 3 using said determined assessment points for each factor; and

a corrosion speed of said metallic material is determined using said determined environmental assessment points.

16. The deterioration diagnosis method according to claim 2 or claim 12,

wherein for an atmospheric environment where said metallic material is used,

said environmental assessment points are calculated by said method disclosed in claim 9; and

a corrosion speed of said metallic material is determined according to said calculated environmental assessment points.

17. The deterioration diagnosis method according to claim 1, wherein a metallic material is exposed under an atmospheric environment for a prescribed period;

corrosion loss of said metallic material for a number of exposure days in a prescribed period is measured; and

a relationship between an amount of said corrosion loss and said number of exposure days calculated by said method disclosed in claim 13 or 14 is corrected using said measurement results.

18. The deterioration diagnosis method according to claim 1, wherein said metallic material is exposed under an atmospheric environment for a prescribed period;

corrosion loss of said metallic material for a number of exposure days in a prescribed period is measured; and

corrosion speed of said metallic material calculated by said method disclosed in claim 15 or claim 16 is corrected using said measurement results.

19. A deterioration diagnosis equipment, comprising:

an input unit for inputting a measured value of an amount of each environmental factor measured by an environmental factor amount measurement unit;

a first database for storing a function giving a relationship to an amount of each environmental factor and assessment points for each factor,

a second database for storing function giving relationships between environmental assessment points and assessment points for each factor for each type of metallic material,

a plurality of assessment points for each factor calculation unit for calculating said assessment points for each factor using said function read out from said first database and an amount of each environmental factor input by said input unit;

an environmental assessment points calculation unit for calculating environmental assessment points which represent a level of the harmfulness of an atmospheric environment using said function read out from said second database and each environment factor calculated by said assessment points for each factor calculation;

a corrosion loss calculation unit for calculating a relationship between an amount of corrosion loss of said metallic material under said atmospheric environment and a number of exposure days using a function in which environmental assessment points calculated by said environmental assessment points calculation unit are formulated as a variable;

a corrosion speed calculation unit for calculating said

corrosion speed of a metallic material under said atmospheric environment using a function in which said environmental assessment points calculated by said environmental assessment points calculation unit are formulated as a variable;

a corrosion loss correction calculation unit for correcting said relationship between said corrosion loss and said number of exposure days calculated by said corrosion loss calculation unit based on said corrosion loss of said metallic material in said number of exposure days of said prescribed period ;

a corrosion speed calculation unit for correcting said corrosion speed calculated by said corrosion speed calculation mean based on said amount of corrosion loss of said metallic material in said number of exposure days of said prescribed period;

a remaining life span calculation unit for calculating a remaining life span of said metallic material based on said relationship between said corrosion loss corrected by said corrosion loss correction unit and said number of exposure days, or based on said corrosion speed corrected by said corrosion speed correction unit; and

an output unit for outputting said remaining life span of each metallic material calculated by said remaining life span calculation unit as diagnosis result.

20. The deterioration diagnosis method according to claim 1

or claim 2,

wherein for a metallic material constituting an electronic circuit, said corrosion loss calculated by said method disclosed in claim 13 or claim 14, said corrosion loss compensated by said method disclosed in claim 17, said corrosion speed calculated by said method disclosed in claim 15 or claim 16, or said corrosion speed compensated by said method disclosed in claim 18 is converted to a corrosion deterioration index for an electronic circuit component by applying a relationship between said corrosion loss or corrosion speed prepared in advance for said metallic material constituting an electronic circuit or said corrosion speed and said corrosion deterioration index of said electronic circuit component formed of said metallic material; and a corrosion deterioration condition of an electronic circuit component is judged according to said corrosion deterioration index.

21. The deterioration diagnosis method according to claim 20,

wherein a copper is used for said metallic material for said electronic circuit;

a copper wiring pattern is used for an electronic circuit component; and

said corrosion deterioration index is a thickness of corrosion of said copper wiring pattern.

22. The deterioration diagnosis method according to claim 20,

wherein an aluminum is used for said metallic material for said electronic circuit;

an integrated circuit is used for said electronic circuit component; and

said corrosion deterioration index is a corroded area rate of aluminum wiring of said integrated circuit.

23. The deterioration diagnosis method according to claim 20,

wherein a silver is used for said metallic material for said electronic circuit;

a silver contact point is used for an electronic circuit component; and

said corrosion deterioration index is a contact resistance value of said silver contact point.

24. The deterioration diagnosis method according to claim 1 or claim 2,

wherein a corrosion deterioration limit value set for a corrosion deterioration condition judged by said method disclosed in claim 20 is converted to a limit value of corrosion weight loss or to a limit value of corrosion speed of said metallic material composing said electronic circuit component, by applying said relationship between said corrosion loss or said corrosion speed disclosed in claim 20 and said corrosion deterioration index of said electronic

circuit component composed of said metallic material.

25. The deterioration diagnosis method according to claim 24,

wherein a copper is used for said metallic material constituting electronic circuit;

a copper wiring pattern is used for said electronic circuit component; and

said corrosion deterioration limit is a rate of decreased thickness limit due to corrosion of said copper wiring pattern.

26. The deterioration diagnosis method according to claim 24,

wherein an aluminum is used for said metallic material for said electronic circuit;

an integrated circuit is used for said electronic circuit component; and

said corrosion deterioration limit is a rate of corroded area of aluminum wiring of said integrated circuit.

27. The deterioration diagnosis method according to claim 24,

wherein a silver is used for said metallic material for said electronic circuit;

a silver contact point is used for said electronic circuit component; and

said corrosion deterioration limit is a contact resistance limit value of said silver contact point.

28. The deterioration diagnosis method according to claim 1 or claim 2, further comprising the steps of:

evaluating harmfulness of an atmospheric environment on a metallic material by performing an atmospheric environment classification method using environmental assessment points, wherein said environmental assessment points are calculated by said method disclosed in claim 9.

29. The deterioration diagnosis method according to claim 1 or claim 2,

wherein a correlation function of contamination level of a surface of an electronic circuit substrate and a deterioration index are calculated in advance;

said contamination level of said electronic circuit substrate of an electronic instrument as a subject of diagnosis target is measured;

said measured contamination level is converted to said deterioration index by applying said measured contamination level in a correctional function; and

said remaining life span of said electronic instrument is diagnosed according to said deterioration index.

30. The deterioration diagnosis method according to claim 1 or claim 2,

wherein a correlation function between a contamination

level of a surface of an electronic circuit substrate and a deterioration corrosion is calculated in advance;

said current contamination level of said electronic circuit substrate of an electronic instrument as a diagnosis target and a contamination level after a prescribed period are respectively measured;

a change with time of deterioration index is calculated by applying each measured contamination level to said correctional function; and

said remaining life span of the electronic instrument is diagnosed according to said change with time of said deterioration index.

31. The deterioration diagnosis method according to claim 29 or claim 30,

wherein said correctional function of said environmental assessment points and said contamination level is calculated in advance;

an amount of each of a plurality of environmental factors, including temperature, humidity, corrosive gas, sea salt particles under an atmospheric environment or a distance from the coast, are determined by applying environmental assessment points, calculated from a sum of multiplications of amounts of each factor and a weighting coefficient for each factor applied according to said amount of each factor, to said correctional function.

32. The deterioration diagnosis method according to claim 29 or claim 30,

wherein a adhered amount of anions, including chlorine ions, nitrate ions and sulfate ions, adhered on a surface of an electronic circuit board per unit area is used as said contamination level.

33. The deterioration diagnosis method according to claim 29 or claim 30,

wherein said deterioration index is a vibration rate of fractal dimension of a temperature distribution image of an electronic circuit substrate

34. The deterioration diagnosis method according to claim 29 or claim 30,

wherein said deterioration index is a wire breaking time of a conductor pattern of an electronic circuit substrate.

35. The deterioration diagnosis method according to claim. 29 or 30,

wherein said deterioration index is an insulation resistance value between conductors of an electronic circuit board.

36. A deterioration diagnosis equipment, comprising:

a contamination level measurement unit for a contamination level and contamination speed on a surface of an electronic board substrate;

a deterioration index database for storing a correlation function of said contamination level of said electronic circuit substrate and a deterioration index;

deterioration index calculation unit for calculating a deterioration index value corresponding to a measured contamination value, outputted from deterioration level measurement unit, and said correctional function read out from said deterioration index database;

a life span database for storing life span threshold values for said deterioration index of said electronic circuit board;

contamination level difference calculation unit for calculating a contamination level difference corresponding to a difference between a current deterioration index value and a life span threshold value read out from said life span database, from a correctional function read out from said deterioration index database; and

a remaining life span calculation unit for calculating a remained life span by dividing said contamination level difference, calculated by said contamination level difference calculation unit, using contamination speed outputted from said contamination level measurement unit.

37. A computer readable medium performing a computer to carry out said method disclosed in claim 1 or 2.